(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
17 February 2005 (17.02.2005)

PCT

(10) International Publication Number
WO 2005/013704 A1

(51) International Patent Classification[7]: A23B 7/00

(21) International Application Number:
PCT/EP2004/007769

(22) International Filing Date: 14 July 2004 (14.07.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/633,207 1 August 2003 (01.08.2003) US

(71) Applicants *(for all designated States except US)*: **BASF CORPORATION** [US/US]; 3000 Continental Drive-North, Mount Olive, NJ 07828-1234 (US). **BASF AKTIENGESELLSCHAFT** [DE/DE]; 67056 Ludwigshafen (DE).

(72) Inventor; and
(75) Inventor/Applicant *(for US only)*: **PETCAVICH, Robert, J.** [US/US]; 4983 Bradshaw CT, San Diego, CA 92130 (US).

(74) Common Representative: **BASF AKTIENGESELLSCHAFT**; 67056 Ludwigshafen (DE).

(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROCESS AND COATING COMPOSITION FOR EXTENDING THE SHELF LIFE OF POST HARVEST PRODUCE

(57) Abstract: The shelf life of fresh harvest produce is extended by coating the exterior surface of freshly harvested produce with a coating composition comprising an aqueous emulsion of polyvinylidene chloride copolymers containing from about 0.25 to 25% by weight of copolymer solids to water and between 0.001 and 20% plasticizer preferably a polyethylene oxide based additive such as Triton-X to weight of copolymer solids in the emulsion. The coating may also contain biocides as well to control bacteria and fungal growth an the post harvest produce during storage, shipping, distribution, and sale of the product. The coating composition is effective in extending the shelf life of produce.

WO 2005/013704 A1

PROCESS AND COATING COMPOSITION FOR EXTENDING THE SHELF LIFE OF POST HARVEST PRODUCE

FIELD OF THE INVENTION

The present invention is directed to a process for preserving post harvest produce by coating the same with a coating composition capable of controlling the transmission of gasses and water vapor into and out of the produce during maturation and/or ripening of the produce.

BACKGROUND OF THE INVENTION

Current techniques for the preservation of fresh post-harvest produce include temperature and/or pressure treatment, controlled atmosphere packaging, wax and similar coating techniques, synthetic polymer coating techniques, polymer packaging and genetic engineering of various metabolic pathways that cause ripening.

Various coating compositions have been proposed, e.g., a petroleum solvent solution of a waxy film former and a fungicide (U.S. Pat. No. 4,006,259); a mixture of lard, tallow, and lecithin applied in molten state (U.S. Pat. No. 4,207,347); hydrogenated jojoba oil (U.S. Pat. no. 4,356,197); a salt of carboxylic acid and an alkyl amine (U.S. Pat. No. 4,532, 156); a 3% oil-in-water emulsion of hydrogenated vegetable oil, stearic acid, and anionic emulsifier, (U.S. Pat. No. 4,649,057); the combination of a food acid, and edible reducing agent and a carbohydrate thickener followed by freezing (U.S. Pat No. 4,751,091); a denatured proteinaceous solution of soybeans, wheat and corn (U.S. Pat. No. 5,128,159); simultaneously scrubbing and drenching with a liquid containing fungicide (U.S. Pat. No. 5,148,738); a slurry consisting of by products of the produce and certain sugars and acids (U.S. Pat. No. 5,364,648); a mixture of a polysaccharide polymer, a preservative, an acidulent and emulsifiers (U.S. Pat. Nos. 5,198,254 and 5,376,391); and, a light activated composition (U.S. Pat. No. 5,489,442).

Various forms of produce packaging are disclosed, by the way of example, in U.S. Pat. Nos. 4,769,262; 5,030,510; 5,093,080; 5,160,768, 5,427,807; 5,547,693; and 5,575,418.

Some Russian and Japanese publications have proposed the use of polyvinyl alcohol as a gas barrier coating for produce, but few if any of these suggestions have found their way into the commercial market.

U.S. Pat. Nos. 6,165,529 and 6,203,833 commonly owned by the assignee of this application, disclose highly improved processes for preserving fresh produce and coating compositions therefore comprised of substantially hydrolyzed cold water soluble polyvinyl alcohol, low molecular weight cold water soluble starch, and surfactant. Optional